

Abstract

Diesel fuels or blending stocks having high cetane number are produced from non-shifting Fischer-Tropsch processes, which directly convert carbon monoxide and hydrogen to diesel distillates over activated carbon supported cobalt based Fischer-Tropsch catalysts. The activated carbon supported cobalt based catalysts comprise a substantially high dispersion of at least one of a zirconium component, an cerium component, a ruthenium component or a potassium component in porous carbon and elemental cobalt either deposited thereon or substantially uniformly dispersed therein, wherein the concentration of activated carbon in the catalyst is from about 20 to about 90 percent by weight, based on the weight of the catalyst, the concentration of elemental cobalt in the catalyst is from about 4 to about 50 percent by weight, based on the weight of the catalyst, the total concentration of the zirconium component, the cerium component, or a combination thereof in the catalyst is from about 0.01 to about 20 percent by weight, based on the weight of the catalyst and calculated as the elemental metal or metals, and the total concentration of the ruthenium component, the potassium component, or a combination thereof in the catalyst is from about 0.01 to about 5.0 percent by weight, based on the weight of the catalyst and calculated as the elemental metal or metals. Activated carbon carrier has a surface area in the range of about 200-2000 m²/g, preferably 800-1500 m²/g, and a pore volume of 0.3 to 2.0 ml/g, preferably 0.35 to 0.75 ml/g, a distribution of pore diameter of 4 to 1000 Å, preferably 5 to 500 Å.